Requirement 101

Introduction to Requirements Management and Delivery Framework

September 28, 2010

What Is Requirements Management and Why It's Important?

"Requirements Management are the activities that control requirements development including change control, requirements attributes definition, and requirements traceability."
Business Analysis Body of Knowledge (BABOK)

It is important because it allows you to solve the right problem and build the right Information Technology (IT) solution via the following activities:

- Eliciting, organizing, and documenting required functionality and constraints
- Tracking and documenting tradeoffs and decisions
- Easily capturing and communicating business requirements

Why Adopt a New Requirements Delivery Framework?

The Requirements Delivery Framework provides a standardized, documented methodology that is tailored, transparent, and template-driven and addresses the following challenges:

- Outdated requirements
- Inconsistent documentation
- Lack of stakeholder involvement, feedback, and approval
- Requirements that do not meet all of the quality criteria

Criteria	Definition
Identified	Each requirement is uniquely identified via an alphanumeric expression (e.g., DOORS Number)
Clear	All readers of a requirement should arrive at the same interpretation of its meaning.
Concise	Each requirement must contain only words necessary to clearly communicate what is needed.
Complete	All known requirements are documented and all conditions under which a requirement applies are stated.
Consistent	The requirements can be met without causing conflict with any of the other requirements.
Correct	Each requirement must accurately describe the functionality to be built. Only the source (customer, user, stakeholder) of the requirement can determine its correctness.
Testable	The requirement must be written so that testers can demonstrate that the system satisfies the requirement.
Feasible	Meeting the requirement should be achievable.
Singular	Each requirement expresses a single, unique idea.
Solution-free	Each requirement expresses the what and why of the need; not how to do it.

Quality Criteria

Benefits of Requirements Management

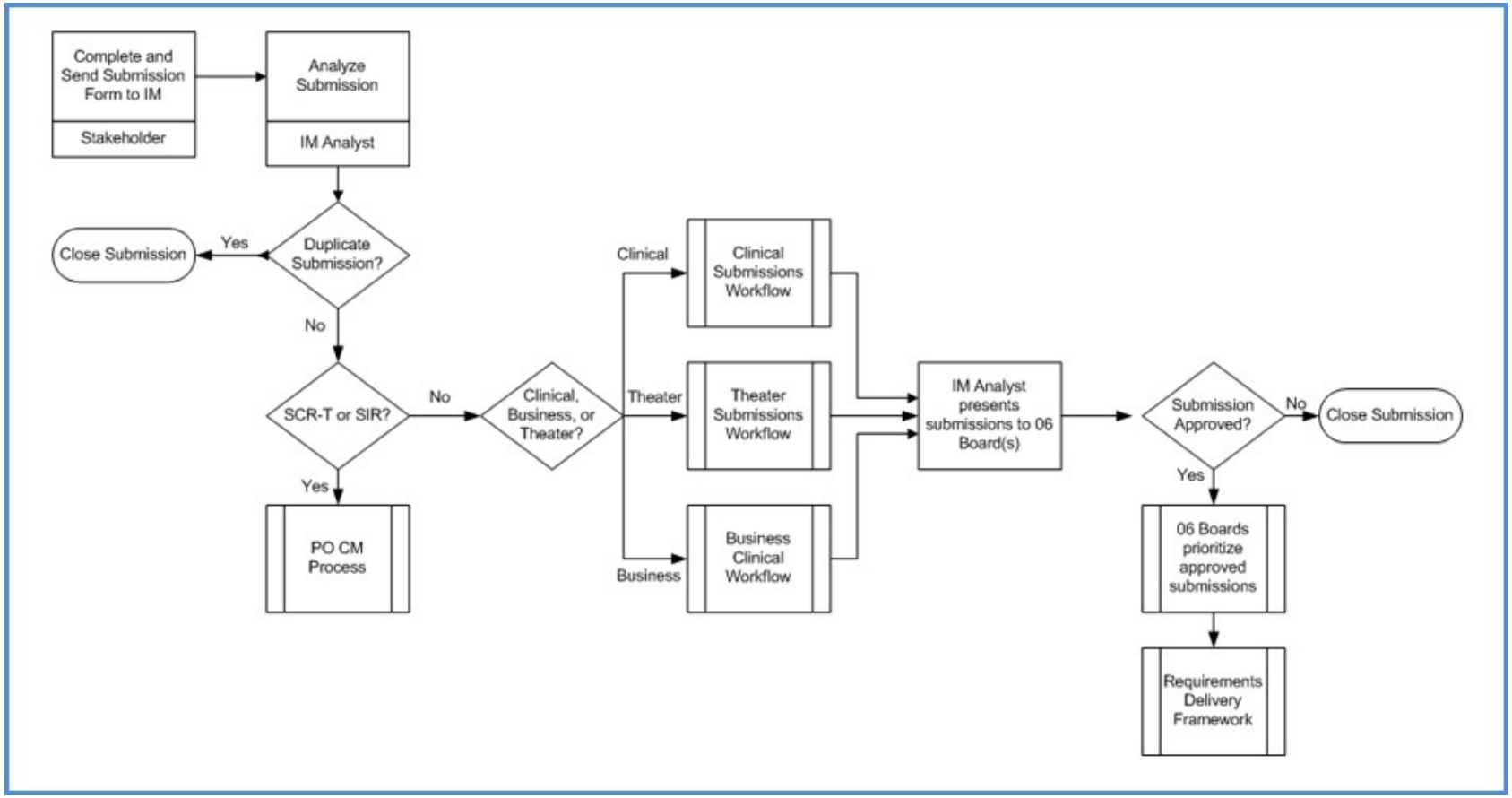
IM follows a streamlined and repeatable requirements process to:

- Comply with MHS IM/IT mandate
- Improve product quality (average improvement = ~40% per year)
- Control development and sustainment costs (average reduction = ~35% per year)
- Improve cycle time (average improvement = ~15-20% per year)

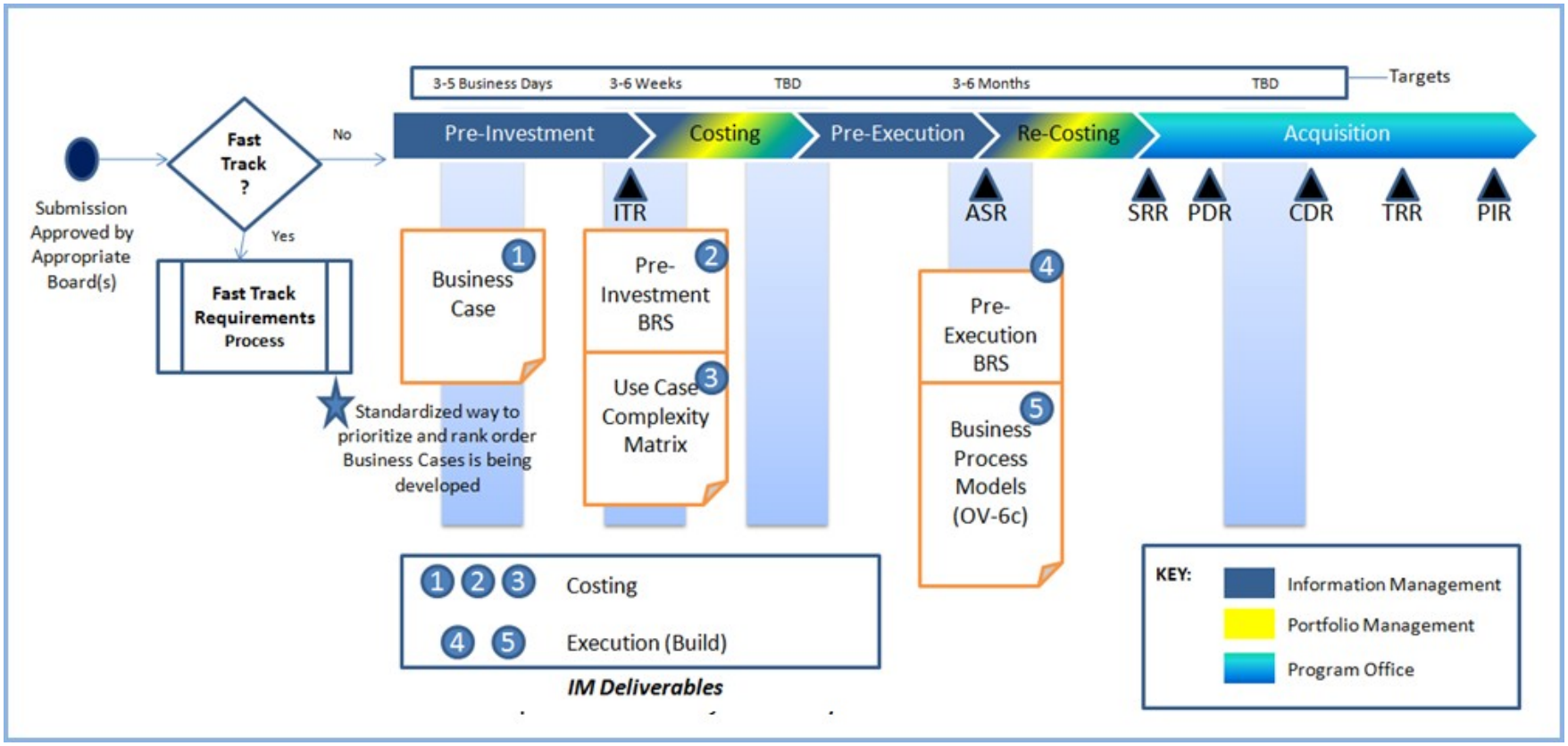
"Requirements errors are the greatest source of defects and quality problems." (Schwaber, 2006; Weinberg, 1997; Nelson et. al, 1999)

"Deficient requirements are the single biggest cause of software project failure." (Hofmann and Lehner, 2001)

Submission Process

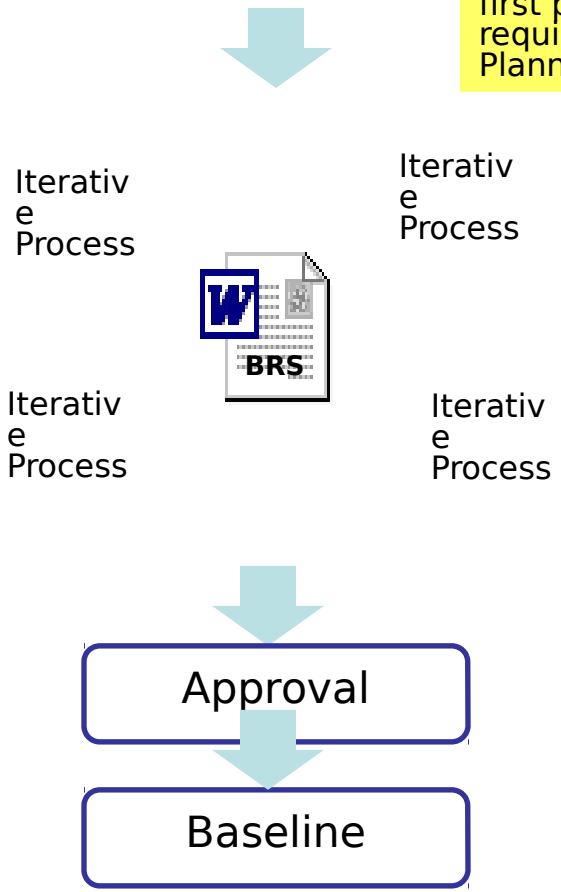


Requirements Delivery Framework



Requirements Lifecycle: From a Bright Idea to a Baselined Set of Requirements

After a submission is approved, it enters the first phase of the requirements process – Planning.



Planning

Requirements Planning is a preparatory phase of the requirements lifecycle during which stakeholders, roles and responsibilities, communication methods, requirements approach, and metrics are identified.

[1] One Requirements Management Plan and one Communications Plan are required for all projects that fall under the CARMS contract.

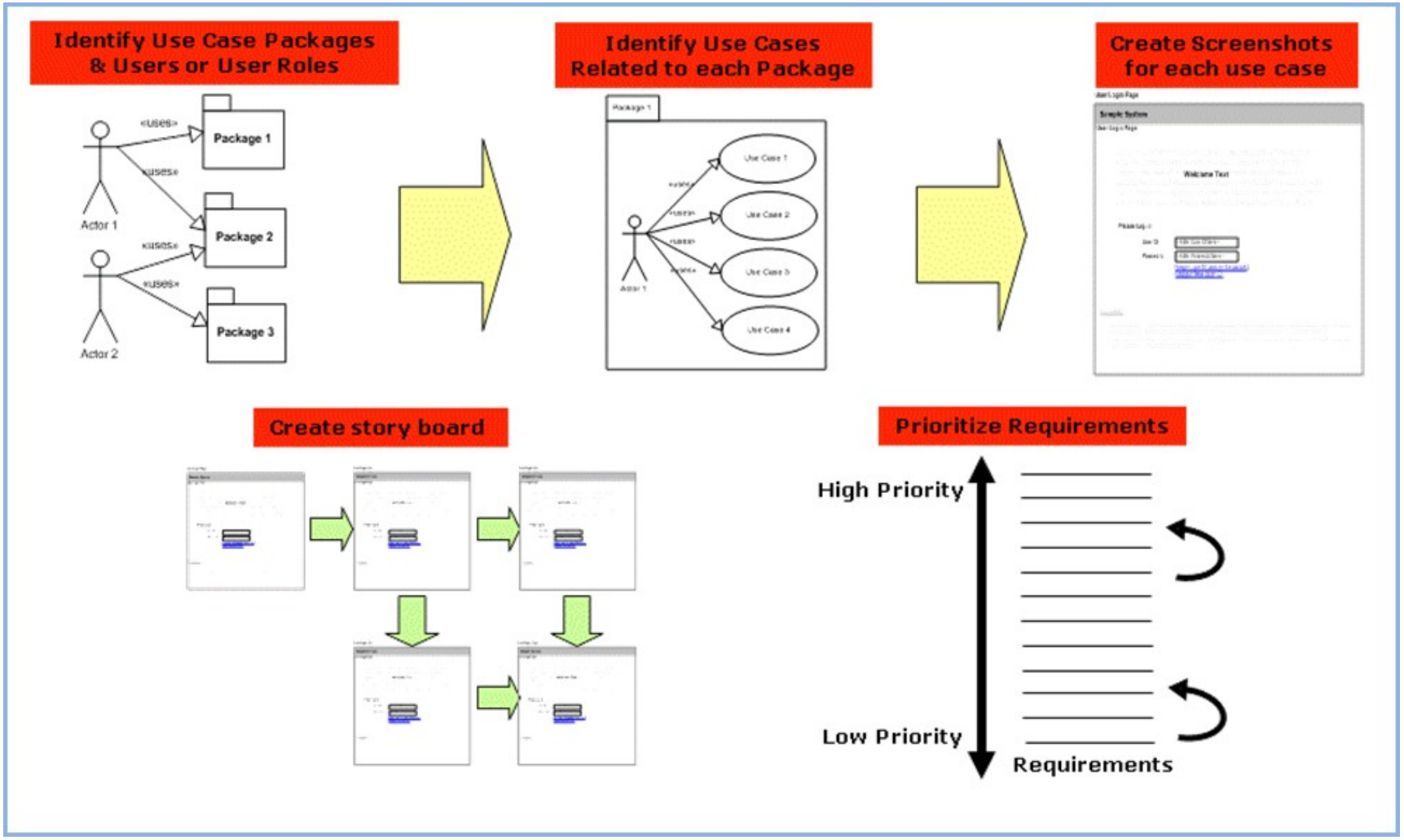
Elicitation

Requirement Elicitation is a phase of learning, uncovering, extracting, surfacing, and discovering the needs of customers, users, and other potential stakeholders.

Analysis

Requirements analysis is the compilation of tasks that go into determining the needs or conditions for the final solution. During this phase analysis models with screenshots, high-level use case packages, and business process diagrams are created, requirements are prioritized, and impacts and risks are assessed.

Analysis (continued…)



Specification

Requirements Specification defines what the product needs to do without addressing how it will be done. During this phase, all business requirements are compiled and ambiguities from possible conflicting requirements of various stakeholders or users are resolved.

Validation

Requirement Validation is ensuring that the stated requirements support and are aligned with the goals and objectives of the business.

Roles and Responsibilities

Role	Responsibilities
Information Management Division	Serve as a liaison between the Warfighter, clinical-business mission owners, Services' stakeholders, and the OCIO.
Information Manager (IM)	• Identify and define the functional and performance requirements that support the MHS Core Functional Areas (i.e., Clinical, Force Health Protection, Business) through their representation of their respective DASDs. • Serve as, or identify, additional SMEs. • Participate on various IPTs and IRD Workgroups to support requirements related activities in the process
IM Analyst	• Serve as experts on MHS capabilities and functional requirements in one or more of the MHS Core Functional Areas (e.g., Clinical, Force Health Protection, and Business). • Assist Information Managers with developing both high-level and detailed functional requirements and manage capabilities. • Review, validate, and prioritize submissions, and develop the IRD CONOPS and assist with its subsidiary artifacts, which may include JCIDS documents • Assists with creating POM and Fiscal Year (FY) Investment Portfolio submissions

Glossary

Term	Definition
Business Requirement	Higher-level statement of goal, objective, or need of the enterprise. It describes why the project is initiated, the things that the project will achieve, and the metrics which will be used to measure its success.
Business Requirements Engineering	A requirements engineering sub-activity consisting of the cohesive collection of all tasks that are primarily performed to produce the requirements and other requirements work products for the customer organization's business enterprise
Functional Requirement	A requirement that specifies a function that a business, application, or component must be able to perform
Requirement	A condition or capability needed by a stakeholder to solve a problem or achieve an objective.
Requirements Analysis	The requirements engineering task during which the reused and elicited raw requirements are analyzed
Requirements Engineering	The activity consisting of the cohesive collection of all tasks that are primarily performed to produce the requirements and other related requirements work products for an endeavor
Requirements Evaluation	The quality control task during which the requirements work products are evaluated
Requirements Specification	The requirements engineering task during which the analyzed requirements for a system, application, application domain, or component are published in requirements specifications (and related requirements documents)
Requirements Validation	The requirements engineering task during which the correctness of the identified and/or analyzed requirements is verified by their stakeholders
Submission	Any idea that fosters a change (addition, modification, or removal) to a capability, policy, process, or system
System Requirement	Statement that describe the behavior and information that the solution will manage. It describes capabilities the system will be able to perform in terms of behaviors or operations – a specific system action or response.
System Requirements Specification (SRS)	The requirements work product that formally specifies the system-level requirements of a single system or an application The requirements specification is the foundation on which the architecture, design, and implementation are built.
	Statement of need of a particular stakeholder or class of stakeholders. It describes the needs that a